

THE CLAIMS

What Is Claimed Is:

- 5 1. <sup>Sub
a1</sup> A gallium nitride-based HEMT device, comprising a channel layer formed of an InGaN alloy.
2. The device of claim 1, comprising an AlGaN/InGaN heterostructure.
- 10 3. The device of claim 1, comprising a GaN layer, an InGaN layer over the GaN layer, and an AlGaN layer over the InGaN layer.
4. The device of claim 1, which does not comprise an aluminum-containing layer.
- 15 5. The device of claim 4, comprising a GaN/InGaN HEMT.
6. The device of claim 4, comprising an InGaN/InGaN HEMT.
7. The device of claim 1, comprising an AlGaN layer.
- 20 8. The device of claim 7, wherein the AlGaN layer is undoped.
9. <sup>Sub
a2</sup> The device of claim 7, wherein the AlGaN layer is doped with a dopant increasing the sheet density thereof.
- 25 10. A method of fabricating a GaN-based HEMT device, comprising forming a channel layer for said device of an InGaN alloy.
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